Energy Efficient QoS Routing Protocol for Handling Hidden Nodes in in Wireless Multimedia Sensor Networks

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Abstract:

Wireless Multimedia Sensor Networks (WMSNs) are comprised of sensor nodes that form the momentary network and do not rely on the support of any orthodox centralized infrastructure or administration. Such a given situation mandates every sensor node to get the support of other sensor nodes to advance the packets to the desired destination node, and specifically to the sink node. In this poster, we introduce energy efficient quality of service protocol for WMSNs, in this work the focus will be to study hidden node problems in WMSNs (Wireless Multimedia Sensor Networks) and how it can affect the network performance.

Hidden node problem(HN):

Hidden nodes occur in the networks when nodes that are invisible to each other communicate with another node that is visible to these nodes at a particular period. Eventually, a collision may occur and the node will be unable to receive any packets.

Hidden node collisions affect four Qualities of Service (QoS) parameters:

1- Throughput
2- Energy consumption
3- Delay

Subdivision Strategy:

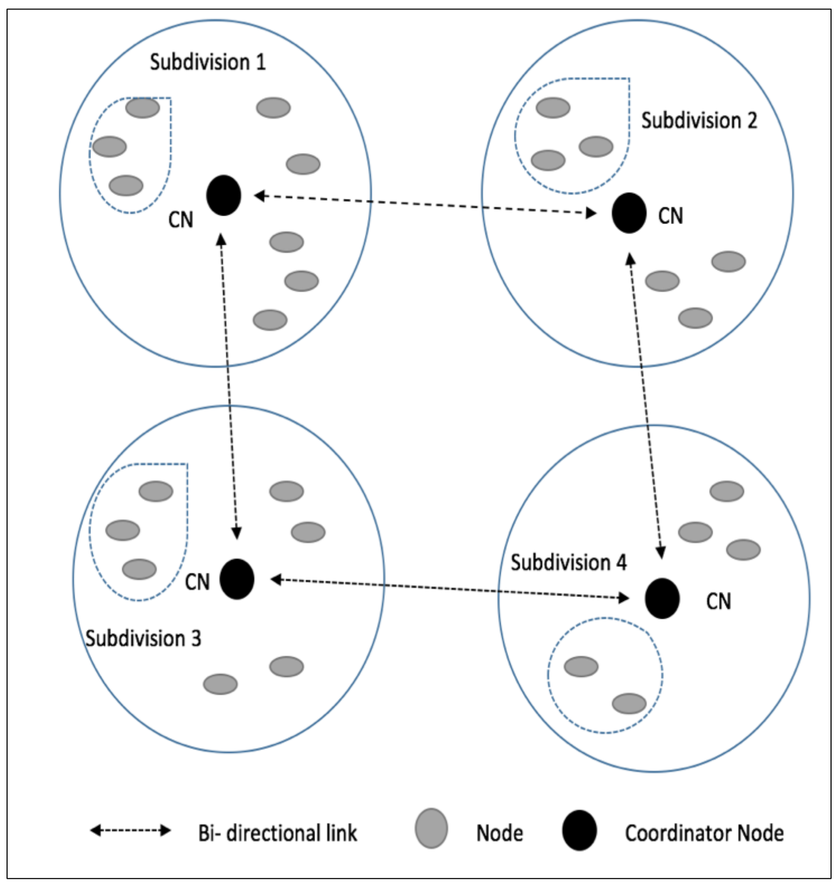

Figure1.the subdivision strategy

- **The network is divided into different subdivisions and each subdivision is managed by a coordinator node.**

1- New Node Request :

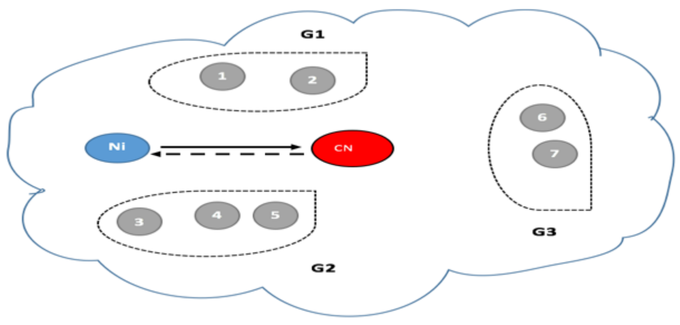

Figure 2. New node request

2- New Node Declaration:

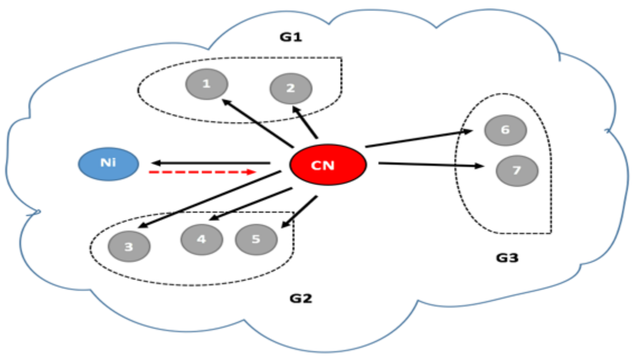

Figure 3. New node declaration

3- Neighbors Reports:

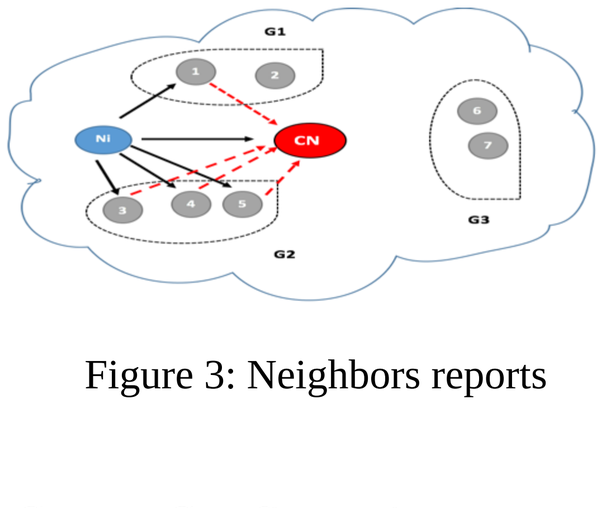

Figure 3: Neighbors reports

4. Group Confirmation:

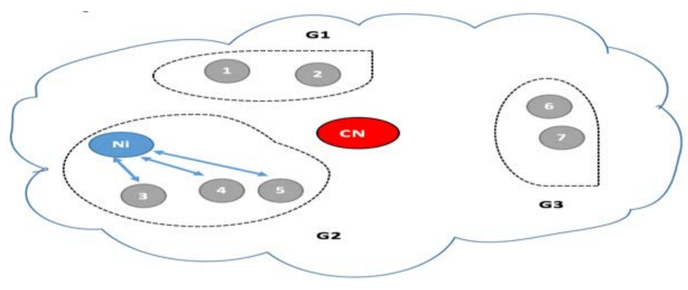

Figure 4: Group confirmation

Conclusions:

- **We introduced energy efficient quality of service protocol for WMSNs.**
- **It provides an efficient solution for handling the hidden nodes problem in WMSNs. It improves throughput, delay, and power consumption.**
- **It improves the network performance in terms of : Throughput , delay and energy consumption.**

References:

1. **A. Alanazi and K. Elleithy, "Real-Time QoS Routing Protocols in Wireless Multimedia Sensor Networks: Study and Analysis," Sensors, vol. 15, pp. 22209-22233, (2015).**
2. **Alanazi, Adwan, and Khaled Elleithy. "An Optimized Hidden Node Detection Paradigm for Improving the Coverage and Network Efficiency in Wireless Multimedia Sensor Networks." *Sensors* 16, no. 9 (2016).**